# FIVE-YEAR REVIEW REPORT

# SECOND FIVE-YEAR REVIEW REPORT
# for
# CHEROKEE COUNTY SUPERFUND SITE

## CHEROKEE COUNTY, KANSAS

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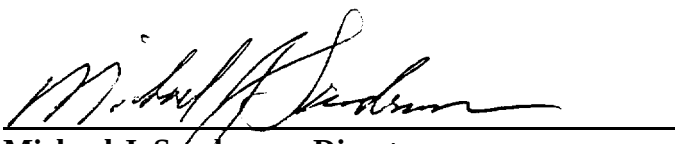

**Michael J. Sanderson, Director**
**Superfund Division**

9-28-00

**Date**

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## 1.0 INTRODUCTION

This report documents the five-year review of all operable units of the Cherokee County, Kansas, Superfund Site in Cherokee County, Kansas (the Site). The first five-year review was completed in September 1995 and exclusively addressed operable unit #01 (OU-1), Galena Alternate Water Supply. This is the second five-year review for the Site and it encompasses the entire Site. Both reviews have been conducted by the U.S. Environmental Protection Agency (EPA).

The purpose of the five-year review is to determine the continued adequacy of remedial response actions undertaken at the Site to protect human health, welfare, and the environment. Section 121 (c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERLCA), as amended, and Section 300.430(f)(4)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan require that periodic (at least once every five years) reviews be conducted for sites where hazardous substances, pollutants, or contaminants remain above levels that allow for unlimited use or unrestricted exposure following the completion of all remedial actions for a site. The reviews are to be completed within five years of initiation of the first remedial action at a site. Remedial activities at the Site began in September 1989 at OU-1.

This five-year review has included field visits at all operable units to observe Site conditions and the status of remedial actions or other Site activities being performed. Site visits were conducted by Dave Drake of EPA, Region 7 on the following dates during the third and fourth quarters of Federal fiscal year 2000: April 18-20; May 2-3; July 26-28; and August 21-25. Representatives of the state of Kansas were also in attendance at selected site visits.

## 2.0 BACKGROUND

The Site represents the Kansas portion of the Tri-State Mining District (the District) and is shown on Figure #1. The District encompasses approximately 2,500 square miles in Oklahoma, Kansas, and Missouri, and was formerly one of the richest lead and zinc ore producing deposits in the world. The Kansas portion of the District lies within the extreme southeast corner of the state. The Site was placed on the National Priorities List in September 1983.

Because of the large geographic area of mining in Kansas, the Site has been divided into seven subsites, which collectively have a total area of about 115 square miles. The subsites include the following: Galena; Baxter Springs; Treece; Badger; Lawton; Waco; and Crestline. It should be noted that the Crestline subsite was recently separated from the Badger subsite based on liability allocation issues identified by responsible parties. These seven subsites encompass most of the area where mining occurred within the Site and where physical surface disturbances are still evident.

The District is characterized by a variety of mine waste features that include the following: large piles of sand and gravel size mill tailings locally known as "chat"; piles of overburden bedrock materials locally known as "bullrock"; tailings impoundments and ponds that contain accumulations of silt and clay size flotation tailings; both open and collapsed mine shafts, sometimes filled with water; and subsidence features. The mine waste areas contain sparse to no vegetation. Local stream systems also contain mining wastes and mining impacted sediments and surface water. Many houses are immediately adjacent to mine waste accumulations or have suffered impacts as a result of smelting. Lead and zinc are found in mining wastes or soils at maximum concentrations of several thousand parts per million (ppm) while cadmium is typically found at levels less than 500 ppm.

Lead and zinc mining began in the middle 1800s and continued for over a century in the District; the final mining activities ceased in the 1970s. Sphalerite (zinc sulfide) and galena (lead sulfide) were the principle mined ores and several other metal sulfides were found in association with the economic ores. The mining activities changed the hydrology of the area by creating a labyrinth of underground voids and many open conduits. These features facilitate surficial subsidences, collapses, and enhanced flow of mineralized groundwater in the subsurface. Surficial mining wastes also leach metals into the groundwater system and surface water bodies. The normal surface and subsurface flow characteristics have been modified by past mining activities, and since much of the surface vegetation is impacted or absent, there is increased infiltration of surface water into the shallow groundwater system and erosion of mining wastes into surface water bodies. During the active mining years, water was continually pumped out of the mines because the ore is located in the same rock formations that contain the area's shallow aquifer. When mining ceased, the mines filled with water as a result of natural groundwater recharge and surface water inflow through mine shafts and subsidence areas. The upper aquifer is now contaminated with metals and is acidic in some areas. Acid mine drainage is prevalent throughout the District.

The primary source of contamination at the Site is the residual metal sulfides in the abandoned mine workings, chat piles, and tailing impoundments in addition to impacts from smelting operations. Upon exposure to the atmosphere, metal sulfides can become oxidized and mobilize as dissolved compounds which increases acidity in surface water and groundwater. The resulting metal-laden acidic water, referred to as acid mine drainage can further leach metals from rock, contaminate groundwater, and fill mine shafts and subsidences. The acid mine drainage can also surface through springs and combine with metals laden surface water runoff to ultimately contaminate rivers, creeks, and lakes. The shallow aquifer is impacted by metals constituents as a result of past mining practices.

## 3.0 OPERABLE UNITS

The seven subsites of the Site are encompassed by seven operable units in order to facilitate the remedial processes. An OU may contain more than one subsite and a subsite may contain multiple operable units. The relationship between the subsites and operable units at the Site is provided below:

OU-1, Galena Alternate Water Supply, contained within the Galena subsite:

OU-2, Spring River Basin, not associated with a subsite, all subsites drain to the Spring River Basin with the exception of the Treece subsite;

OU-3, Baxter Springs subsite;

OU-4, Treece subsite;

OU-5, Galena Groundwater/Surface Water, contained within the Galena subsite;

OU-6, Badger, Lawton, Waco, and Crestline subsites;

OU-7, Galena Residential Soils, contained within the Galena subsite.

## 4.0 REMEDIAL ACTIONS

Several response actions have been completed at the Site. Many operable units are in different phases of the Superfund process. The following information summarizes the current status and completed response actions for each OU at the site.

OU-l, Galena Alternate Water Supply

This OU is in the operation and maintenance (O&M) phase. All EPA Superfund work has been completed as a fund-lead effort and the remedy is in place under long-term O&M by the state of Kansas. Initial response actions included the provision of bottled water and water softener units as removal actions prior to the completion of a permanent alternate water supply system as the final remedial action. A rural water district was formed, water supply wells were installed, and the new source of drinking water was provided to 400 residences in rural areas near the community of Galena, Kansas. Nearly 1,500 people were provided with a permanent source of clean drinking water and over 57 miles of pipeline was placed during the construction effort. The upper aquifer in this area is impacted by metals contaminants (lead, zinc, and cadmium) from mining operations. Private, shallow, water supply wells were affected; municipal wells for the city of Galena are constructed in a lower pristine, potable aquifer and are not impacted by past mining activities. The source of water for the rural water district is also the lower potable aquifer. The rural water district has expanded by 52 new users, for a total of 452 residential hookups, since completion of the remedial action in 1994. There are no known problems with the operation of the rural water district.

There is a related development that may potentially have an impact on the rural water district. The neighboring Empire Electric Utility Company in Riverton, Kansas, has recently installed six new pumping wells located a few feet (estimated at less than 100 feet) over the Kansas/Missouri state line, located in Missouri, and is planning on pumping each well at 625 gallons per minute (gpm) for an approximate daily total of two million gallons per day (gpd).

The wells are intended for process water purposes and a great deal of excess water is reportedly being pumped to waste by surface discharge. The actual depth of well placement, originally estimated at 2,500 feet, is unknown. Original pump estimates, reportedly provided by the utility, of 250 gpm per pump are much lower than the current actual capacities of 625 gpm per well. The system reportedly began operating during the week of September 11, 2000. The two rural water district wells are placed at depths of 1,150 and 1,200 feet and typically yield 100,000 gpd. There is concern that this new utility well system will have an impact on the rural water district. The system has not been in operation for a sufficient amount of time to assess impacts at this point. This ongoing situation has been historically coordinated with the Division of Water at the Kansas Department of Health and Environment (KDHE). Further monitoring and coordination are required in order to ensure that the rural water district is not adversely affected by these new pumping wells.

OU-2, Spring, River Basin

This OU is currently inactive. It is unlikely that a separate response action will be undertaken at this OU. All of the Cherokee County subsites drain to the Spring River Basin, with the exception of the Treece subsite which flows to the Tar Creek drainage basin. Since separate response actions are planned or completed for each contributing subsite, there may not be a need to separately address the Spring River Basin. The basin also receives mine waste impacts from upgradient sources in the state of Missouri and response actions for those sources are being planned by EPA and Missouri as part of the Oronogo-Duenweg Mining Belt Superfund Site in Jasper County, Missouri. Work on OU-2 is not planned at this time.

OU-3, Baxter Springs Subsite

This OU is currently in the remedial design (RD) phase for the minewaste cleanup effort and the remedial action (RA) phase for the residential cleanup effort. Response actions at this OU are being conducted by potentially responsible parties (PRPs) under a Consent Decree signed in 1999. Residential cleanup efforts to date (September 2000) include the sampling of approximately 100 residential properties and the remediation of approximately 30 properties. Current activities include sampling and cleanup at a few remaining properties. The Agency plans to complete the residential cleanup in calendar year 2000.

The RD phase for minewaste cleanup is at the 30% design completion stage and design field work is complete. The Agency plans to finish all RD work in the spring of 2001 and begin the RA phase, which is estimated to be complete in 2003.

The residential component of the response action includes sampling and remediation, as necessary, of residential soils from properties impacted by mining activities. Mining related activities in the Baxter Springs area consist of the importation (landscaping, fill material, driveway material, etc.) of mining wastes from nearby waste accumulations as well as erosion of wastes from these areas. Wastes also migrate into stream systems and may be transported to residential areas near streams during flood events. Mining wastes are prevalent in the western

areas of the Baxter Springs community; thus, most of the residential effort has been targeted in this area. Properties with lead values exceeding 800 ppm lead or 75 ppm cadmium are excavated until lead and cadmium levels are less than 500 and 25 ppm, respectively, or until a maximum excavation depth of one foot is achieved. Properties are backfilled with clean native soils and re-vegetated. This same criteria is utilized for residential work at other operable units of the Site.

The mine waste cleanup portion of the RA includes the removal of wastes from minor streams and drainages, draining and capping tailings impoundments, and capping and re-vegetation of chat piles. The minewaste cleanup addresses minewaste accumulations that contribute loadings to surface water bodies. Some surficial accumulations of mining wastes are not addressed by the remedy where they are not contributing to the degradation of surface water.

OU-4, Treece Subsite

The RA at this subsite is complete, the final RA report has been submitted (September 2000). The work at this OU was completed by PRPs under the same 1999 Consent Decree as the OU-3 work. This OU will transition to long-term O&M in calendar year 2000.

The response action consisted of a residential lead cleanup for the community of Treece, Kansas. The town of Treece is located near several former mining areas and wastes from these areas were transported to residential locations for a variety of purposes such as driveway construction, landscaping, fill material, and alley/road construction. Approximately 150 residential properties were sampled and 41 properties were remediated during the RA. The remediation consisted of removing up to one foot of metals (lead, cadmium, and zinc) impacted soils from residential yards followed by placement of clean backfill soils and re-vegetation. Additional components of the RA included a well search to determine if any residents in the Treece area were consuming contaminated water from private water wells followed by the abandonment of these wells when identified. Any deep wells providing a conduit to transmit contaminated water from the upper aquifer to the lower pristine aquifer were to be abandoned under the Treece RA. Well search activities did not identify any deep wells transmitting contaminants to lower clean aquifers or any residents consuming impacted groundwater. The town of Treece is served by a municipal water system that is regulated by the state and provides safe drinking water.

OU-5, Galena Groundwater/Surface Water

This OU is in the O&M phase with EPA Superfund work completed and the remedy is in place and under long-term O&M by the state of Kansas. The remedy was completed in 1996 and transitioned to the O&M phase in 1997. The response action consisted of a fund-lead mine waste cleanup of approximately 900 acres of non-residential land surrounding the community of Galena, Kansas. Mining wastes were segregated and wastes less than 1,000 ppm lead were placed at the surface with more impacted wastes placed at depth or used as fill material for open dry shafts. Low concentration wastes or bull rock were used to fill shafts that contained water. In general, large mine waste accumulations were re-graded and re-distributed, local drainages

were enhanced by rip rap, new engineered drainages were created (geotextile lined with rip rap), open mine shafts and collapse features were filled with wastes, and the surface was re-vegetated with a mixture of warm-tall-season, native-prairie grasses. Selected areas were re-vegetated following a series of inspections after completion of the remedy.

No major issues have developed during the O&M period. Some amount of re-grading and re-seeding will be required as an expected long-term maintenance item. A small number of filled shafts and collapses have partially re-opened over time. These routine follow-up aspects of the remedy are expected to occur over time as part of O&M. A three year follow-up study of the Galena subsite, conducted by the Kansas Biological Survey at the University of Kansas, will be completed in 2001. This study will assist in evaluating the effectiveness of the OU-5 remedy. The study assesses the quality of surface water, sediments, and biological communities in the drainage area of the OU-5 mine waste cleanup action and contrasts these findings with earlier pre-cleanup data.

OU-6, Badger, Lawton, Waco, and Crestline Subsites

This OU is currently in the remedial investigation/feasibility study (RI/FS) phase with the work being performed by PRPs under an Administrative Order on Consent issued in 1998. The draft RI has been completed and a draft FS is nearing completion. The scope of this work was based on the RI/FS for OU-3/4 and was contemplated to consist of a presumptive remedy similar to the approach for mining wastes at the Baxter Springs subsite.

There has been an approximate six month delay in work at this operable unit due to concerns about future total maximum daily loads (TMDLs) established under the Clean Water Act for stream segments in the Site. For certain streams in the Site, KDHE conducted a use attainability analysis (UAA) and the results of this analysis are being considered in the FS for OU-6. The UAA findings and future TMDLs have necessitated an expansion of the presumptive remedy approach at this operable unit. An, expanded FS is nearing completion and future meetings are planned, with input from EPA and KDHE Water Division personnel, in order to achieve a RI/FS that considers Clean Water Act criteria not envisioned in the presumptive remedy approach. RI/FS completion and selection of a remedy in a record of decision (ROD) are planned for 2001. A Consent Decree requiring PRPs to implement the RD/RA is planned for 2002 with the work being conducted in 2002 and 2003.

OU-7, Galena Residential Soils

This OU is in the final stages of RA and will be completed in late 2000 with O&M activities beginning in 2001. This fund-lead effort consisted of a residential cleanup action using the same criteria as discussed above for OU-3 and OU-4. The presence of a smelter in the town of Galena was responsible for a much larger residential lead problem than at the other subsites due to the wind dispersion of smelter emissions over a large area. More than 1,500 properties were sampled in the Galena area and over 700 residential properties were remediated.

A follow-up blood-lead study is currently being conducted by KDHE, the local Cherokee County Health Department, and the Agency for Toxic Substances and Disease Registry (ATSDR) in the community of Galena. A prior ATSDR study predated the remedial work and this latest study is aimed at providing an assessment of any change in blood-lead levels following the completion of the remedial action. This study will be completed in 2001.

Institutional controls are also being implemented in Galena, as well as the other subsites, by KDHE and the Cherokee County Health Department. The current institutional controls program has been operational for three years and has recently been extended to 2002. The effort includes the following components: health education regarding all aspects of lead exposure; blood-lead testing; physician education on the awareness and symptoms of lead poisoning; in-home lead assessments performed by the county health department; provision of a high efficiency particulate vacuum upon request by county residents; and quarterly reporting of all aspects of the institutional controls program. It should be noted that the ultimate institutional controls program for each OU at the Site also includes other elements such as land use controls, building permits, and testing requirements for development in mining impacted areas. All elements of the county wide institutional controls program have not yet been implemented. Full implementation is expected at the completion of the OU-6 RA, the final Site cleanup action.

## 5.0 FIVE-YEAR REVIEW PROCESS/FINDINGS

The five-year review includes an assessment of any newly promulgated or modified requirements of Federal and state environmental laws in addition to an update and evaluation of the effectiveness of response actions conducted, or planned for implementation, at the Site. New laws or requirements are evaluated to determine whether they are applicable or relevant and appropriate requirements with respect to any response actions conducted at the Site, and whether they call into question the protectiveness of any response action selected in any ROD for the Site. The intent of the five-year review process is to evaluate selected remedies at a site and determine if the remedies remain protective of human health and the environment.

The five-year review team for the Site includes the following individuals: Dave Drake, EPA Project Manager; Jane Kloeckner and Bob Richards, EPA Attorneys; Hattie Thomas, EPA Community Involvement Coordinator; Randy Carlson, KDHE Unit Chief; and Leo Henning, KDHE Section Chief. The five-year review will be placed in site repositories for the Site, as well as the EPA, Region 7 office, and its availability will be announced by a public notice in local newspapers.

The in-place remedies at this Site are considered to be fully protective and the remedies in progress are expected to be fully protective once implemented. Some institutional control components of the remedies are not fully implemented at this time but are expected to be protective when implemented. The following section discusses the follow-up actions that are necessary to achieve, or continue to ensure, protectiveness. Deficiencies that prevent a response action from being protective were not identified at the Site.

## 6.0 DEFICIENCIES AND RECOMMENDATIONS FOR FOLLOW-UP

The following recommendations for follow-up have been identified as a result of the five-year review process for the Site; no deficiencies were identified. The follow-up recommendations are discussed below on an OU basis. An additional overall follow-up item pertaining to institutional controls for the entire site is also discussed.

OU-1, Galena Alternate Water Supply

No deficiencies identified. One follow-up item includes the assessment of any impacts to the existing rural water district from a newly installed pumping system at a neighboring local utility company. This will be assessed by KDHE in 2001.

OU-2, Spring River Basin

No deficiencies or recommendations for follow-up identified.

OU-3, Baxter Springs Subsite

No deficiencies or recommendations for follow-up identified.

OU-4, Treece Subsite

No deficiencies identified. Follow-up items include the following: continue to assess blood-lead levels over time to monitor the effectiveness of the cleanup; continue to monitor nearby mine waste piles for potential re-contamination of residential areas; coordinate with EPA, Region 6 and the state of Oklahoma regarding any changes to the Tar Creek remedy or re-classification of use for Tar Creek; consider any potential impacts stemming from recommendations resulting from a future natural resource damage assessment and newly established TMDLs for the Tar Creek drainage basin. These follow-up items will be addressed by EPA and KDHE over time.

OU-5, Galena Groundwater/Surface Water

No deficiencies identified. One follow-up item includes the assessment of the soon-to-be completed (2001) biological/ecological study of the cleanup area. The findings of this effort will help to assess the post remedial quality of surface water, sediments, and biological communities and should be incorporated into the next five-year review. This follow-up will be completed by EPA and KDHE. Also, Kansas may establish TMDLs for stream segments in the Galena subsite; Region 7 will follow-up and consider any potential impacts on the protectiveness of this OU remedy after the TMDLs are established by KDHE and approved by EPA.

OU-6, Badger, Lawton, Waco, and Crestline Subsites

No deficiencies or recommendations for follow-up identified.

OU-7, Galena Residential Soils

No deficiencies identified. One follow-up item includes the assessment of the completed follow-up blood-lead study in 2001. The findings of this study should be incorporated into the next five-year review for the Site and will be assessed by EPA and KDHE.

Overall Site-Wide Follow-Up

Institutional controls aspects are woven into the remedial actions at the Site. The institutional controls program will be a county-wide effort that is applicable to each OU. Some aspects of the institutional controls program have been implemented but all components of the work are not established at this time and the full program has not been implemented. It is estimated that the complete institutional controls program will be in place at the completion of the OU-6 remedial action and will be coordinated by EPA and KDHE.

Prior Five-Year Review Follow-up

The first five-year review addressed OU-1 and identified four follow-up issues. These issues consisted of the following: excessive system water losses; problems with one of the pumps; a leaking roof; and complaints over water hardness. These issues have been resolved with the exception of the presence of hard water which is a natural aspect of the aquifer. As discussed in the September 1995 Five-Year Review Report, a small number of users continue to voice concerns about hard water. However, a state-wide review of water supply systems in Kansas, conducted in 1995 by KDHE, indicated that the water quality with regard to hardness, as well as cost, were well within normal ranges for current operating systems. Water softener systems are being recommended as a personal option for the few users who voice concerns about water hardness.

## 7.0 PROTECTIVENESS STATEMENTS

The protectiveness aspects of all response actions conducted at all operable units of the Site will be described. Protectiveness cannot be assessed at all operable units since the site is currently not at construction completion. Additionally, the Site wide institutional controls program is not fully implemented and thus cannot be assessed at this time. Construction completion is estimated to occur in 2005.

OU-1, Galena Alternate Water Supply

The rural water district has supplied safe drinking water to rural residents in the Galena area for approximately six years. The system continues to expand by adding new hookups and residences. The remedy remains protective and continues to be operational and functional. Human health threats associated with consuming metals contaminated shallow groundwater from private wells have been alleviated by the provision of a safe drinking water source.

OU-2, Spring River Basin

The Spring River Basin is expected to be protected as a result of response actions implemented at the Cherokee County, Kansas and Jasper County, Missouri, Superfund sites. All necessary response actions are not completed at this time. Potential future enforcement, under the Clean Water Act or other statutes, against parties not subject to CERCLA liability will also likely enhance the quality of the Spring River. The ultimate protectiveness of this OU cannot be assessed until all response actions have been completed and sufficient time has transpired to allow a scientific evaluation of new monitoring data as contrasted to historic results.

OU-3, Baxter Springs Subsite

The protectiveness of this subsite cannot be assessed as the response actions are ongoing. The final remedy is expected to be protective of human health and the environment. Residential areas will be tested and remediated thus alleviating metals uptake from residential soils. Mining wastes contributing to the contamination of surface water bodies will be stabilized thus providing some measure of ecological protectiveness. Metals loading to surface water bodies, the groundwater system, and erosion of wastes will be reduced upon remedy completion. The primary contributing mine waste accumulations, from a metals loading perspective, will be addressed by the remedy and all residential properties in Baxter Springs that are impacted above action levels will be addressed.

OU-4, Treece subsite

The protectiveness of OU-4 cannot be assessed at the current time. Although the remedy has recently been completed, sufficient time has not elapsed to evaluate the protectiveness of the remedy. However, it is expected that the remedy is fully protective. An identical remedy was implemented at OU-7 and is in the process of being assessed by conducting a follow-up-blood-lead study. The preliminary results of this study indicate an improvement in protectiveness shown by falling blood-lead levels. These same results would be expected for the Treece subsite, as well as all residential cleanups (OU-3 and OU-6) at the Site, due to the identical nature of the residential remedies.

Ecological receptors and any potential mine waste erosion to residential areas were not addressed by the OU-4 remedy. The Treece remedy consisted of a residential cleanup action; mining wastes in non-residential areas were not addressed based upon a technical

impracticability waiver of surface water criteria. Potential mine waste erosion or impacts to the completed remedy were deemed to not be a major concern during remedy selection since the primary cause of the residential contamination was thought to be the importation of mining wastes as fill, landscaping, and driveway material as opposed to erosion. However, potential re-contamination of residential areas may need to be assessed over time in order to confirm this hypothesis. Ecological impacts were not addressed based on a technical impracticability approach in concert with an earlier remedial approach taken by the state of Oklahoma and EPA, Region 6. Oklahoma, EPA Region 6, Kansas, and EPA Region 7 (Treece subsite) have similar mine waste impacted areas that are part of the Tar Creek drainage basin. Tar Creek has been classified as a no beneficial use water body by the state of Oklahoma and past cleanup decisions by Oklahoma and EPA, Region 6 have waived surface water criteria for the Tar Creek basin on the basis of technical impracticability. The completed Region 7 cleanup of the Treece subsite also waived surface water criteria based on a technical impracticability approach with support of the state of Kansas. However, the ROD for OU-3/4 has provisions that mandate a re-assessment of the remedy for the ecological impacts if Oklahoma or Region 6 enact changes to the current classification of Tar Creek or re-open the remedy for this portion of the Tar Creek Superfund site.

OU-5-Galena Groundwater/Surface Water

The 900 acres of mining wastes remains effectively vegetated in general and the majority of the filled shafts and subsidence features remain closed. Erosion of mining wastes and metals impacted soils to streams has been reduced, leaching of heavy metals to the groundwater system has been reduced, and some degree of ecological improvement has been identified based on the preliminary findings of an ongoing biological/ecological assessment of the area. A three year evaluation study is underway and the results will be available and analyzed prior to the next five-year review at the site. This remedy remains protective and is operational and functional.

OU-6, Bayer Lawton, Waco, and Crestline Subsites

Protectiveness cannot be assessed at this operable unit since the remedy has not been selected. This OU is in the RI/FS phase. It is anticipated that the remedial approach selected at these subsites will be protective of human health and the environment since the actions will be based, at a minimum, on past successful work conducted at other operable units at the Site.

OU-7, Galena Residential Soils

This remedy is nearly complete and has been shown to be protective. Over 700 residential properties have been remediated and a follow-up blood-lead study has shown nearly a 50% drop in blood-lead levels as contrasted with blood-lead levels measured prior to remedial action. A small number of properties (estimated at less than 10) are yet to be completed and the draft blood-lead study is approximately 98% complete. Both efforts will be completed in 2001.

## 8.0 NEXT REVIEW

Since hazardous substances, pollutants, or contaminants remain at the Site at levels above cleanup standards in certain locations, and all areas of the site have not yet been addressed or have been addressed and do not allow for unlimited use, EPA will conduct additional statutory five-year reviews. The next five-year review will be completed in September 2005.

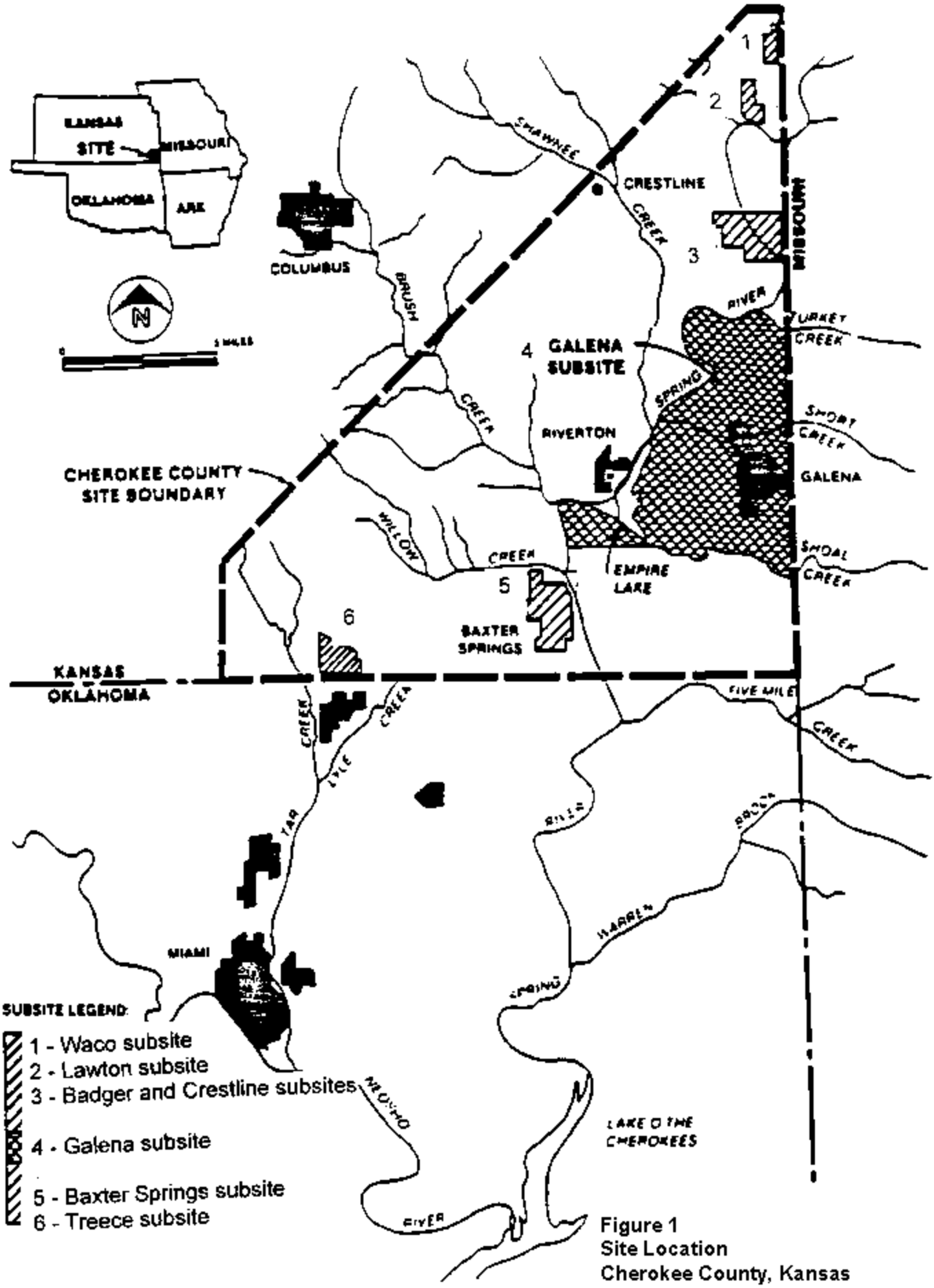


**Figure 1**
**Site Location**
**Cherokee County, Kansas**